



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/687,788

10/17/2003

Shamci Monajembashi

SHA-001

9873

3897 7590 03/12/2008

SCHNECK & SCHNECK

P.O. BOX 2-E

SAN JOSE, CA 95109-0005

EXAMINER

WHALEY, PABLO S

ART UNIT

PAPER NUMBER

1631

MAIL DATE

DELIVERY MODE

03/12/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/687,788	<b>Applicant(s)</b> MONAJEMBASHI, SHAMCI	
	<b>Examiner</b> PABLO WHALEY	<b>Art Unit</b> 1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19, 21, 24-26, 28 and 29 is/are pending in the application.
- 4a) Of the above claim(s) 1-15 and 27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16-19, 21, 24-26, 28 and 29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 1631

### **DETAILED ACTION**

1. In view of the appeal brief filed on 12/05/2007 and an updated search of the prior art, PROSECUTION IS HEREBY REOPENED. Newly applied rejections are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

/Marjorie Moran/

Supervisory Patent Examiner, Art Unit 1631

### ***Claims Under Examination***

Claims herein under examination are claims 16-19, 21, 24-26, 28 and 29. Claims 20, 22, and 23 have been cancelled. Claims 1-15 and 27 remain withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim

***Withdrawn Rejections***

The rejection of claim 18 under 35 U.S.C. 112, second paragraph is withdrawn in view of applicant's arguments filed 11/20/2006.

The rejection of claims 16-19, 21, 24-26, and 28 are rejected under 35 U.S.C. 103(a) as being made obvious by Henon et al. (Biophysical Journal, 1999, Vol. 76, p.1145-1151), in view of Jan et al. (THE JOURNAL OF GENERAL PHYSIOLOGY, 1973, Vol. 61, p. 638-654) is withdrawn in view of applicant's arguments filed 12/05/2007.

The rejection of claims 16-19, 21, 24-26, 28 and 29 under 35 U.S.C. 103(a) as being made obvious by Visscher et al. (Cytometry, 1993, Vol. 14, p.105-114), in view of Jan et al. (The Journal Of General Physiology, 1973, Vol. 61, p. 638-654) and Shaw et al. (Cellular Microbiology, 2001, Vol. 3, No. 4, p.213-222) is withdrawn in view of applicant's arguments filed 12/05/2007.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C.102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 16-17, 19, 21, 24-26, and 28 are rejected under 35 U.S.C. 102 (b) as being anticipated by Bronkhorst et al. (British Journal of Haematology, 1997, Vol. 96, p.256-258). ***This rejection is newly applied.***

Bronkhorst teaches a method for studying cell-cell interaction in between red blood cells (i.e. erythrocytes) [Abstract]. An optical tweezer system is disclosed in detail [p.256, Methods] and includes a 1064-nm laser beam and microscopic imaging capabilities [Fig. 1], as in claims 19, 21, 26, 27, and 28. It is noted that the specification [p.8] defines a long-wave laser beam to be between 700 and 1100 nm, therefore Bronkhorst teaches this limitation. In particular, Bronkhorst teaches applying two optical traps (i.e. multiple laser beams) to red blood cells in order to bring them together, allowing a brief period of aggregate formation wherein cells are attached, and then pulling cells apart using optical tweezers [p.256, Col. 2, last ¶]. Therefore, Bronkhorst provides steps for applying optical tweezers and adhering as in claims 16, 19, 21, 24, and 25. Bronkhorst also provides a list [Table 1] of substances used that change the surface charge of the erythrocytes, and discloses that an anticoagulant was used to treat cells prior to experimentation [p.256, Col. 2, ¶3]. Therefore claim 17 is anticipated since cells inherently have surface charges with differing signs.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 1631

Claims 16, 17, 19, 21, 24-26, 28 and 29 are rejected under 35 U.S.C. 103(a) as being made obvious by Bronkhorst et al. (British Journal of Haematology, 1997, Vol. 96, p.256-258), in view of Visscher et al. (Cytometry, 1993, Vol. 14, p.105-114). ***This rejection is newly applied.***

Bronkhorst teaches a method for studying cell-cell interaction in between red blood cells (i.e. erythrocytes) [Abstract]. An optical tweezer system is disclosed in detail [p.256, Methods] and includes a 1064-nm laser beam and microscopic images [Fig. 1], as in claims 19, 21, 26, 27, and 28. It is noted that the specification [p.8] defines a long-wave laser beam to be between 700 and 1100 nm, therefore Bronkhorst teaches this limitation. In particular, Bronkhorst teaches applying two optical traps (i.e. multiple laser beams) to red blood cells in order to bring them together, allowing a brief period of aggregate formation wherein cells are attached, and then pulling cells apart using optical tweezers [p.256, Col. 2, last ¶]. Therefore, Bronkhorst provides steps for applying optical tweezers and adhering as in claims 16, 19, 21, 24, and 25. Bronkhorst also provides a list [Table 1] of substances used that change the surface charge of the erythrocytes, and discloses that an anticoagulant was used to treat cells prior to experimentation [p.256, Col. 2, ¶3]. Therefore Bronkhorst shows surface charges with differing signs.

Bronkhorst does not specifically teach the use of a confocal microscope.

Visscher et al. teach the use of a confocal scanning laser system for the micromanipulation of cells [Abstract] by inducing optical forces for manipulating a target comprising a confocal microscope, multiple beams, optical tweezers, and long wave beams [Fig. 1], [p.106, Col. 2, ¶ 3], and [p.112, Col. 2, ¶ 2]. Visscher et al. also teach unique multi-trap technique that provides a benefit of indirectly trapping biological objects using optical tweezers and multiple cells [p.113, Col. 1, ¶ 4 and Col. 2, ¶ 1] and [Fig. 7].

It would have been obvious to someone of ordinary skill in the art at the time of the instant invention to practice the method of Bronkhorst using the confocal cell trapping system of Visscher et al.,

Art Unit: 1631

since Bronkhorst teaches multiple optical traps for cell manipulation, as shown above. The motivation to combine the above references is provided by Visscher [p.113, Col. 1], who show a unique technique for trapping multiple erythrocytes, resulting in the practice of the instant claimed invention.

Claims 16 and 18 are rejected under 35 U.S.C. 103(a) as being made obvious by Bronkhorst et al. (British Journal of Haematology, 1997, Vol. 96, p.256-258), in view of Kelm et al. (Glycoconjugate Journal, 1994, Vol. 11, p.576-585). *This rejection is newly applied.*

Bronkhorst teaches a method for studying cell-cell interaction in between red blood cells (i.e. erythrocytes) [Abstract]. An optical tweezer system is disclosed in detail [p.256, Methods] and includes a 1064-nm laser beam and microscopic images [Fig. 1], as in claims 19, 21, 26, 27, and 28. It is noted that the specification [p.8] defines a long-wave laser beam to be between 700 and 1100 nm, therefore Bronkhorst teaches this limitation. In particular, Bronkhorst teaches applying two optical traps (i.e. multiple laser beams) to red blood cells in order to bring them together, allowing a brief period of aggregate formation wherein cells are attached, and then pulling cells apart using optical tweezers [p.256, Col. 2, last ¶]. Therefore, Bronkhorst provides steps for applying optical tweezers and adhering as in claims 16, 19, 21, 24, and 25. Bronkhorst also provides a list [Table 1] of substances used that change the surface charge of the erythrocytes, and discloses that an anticoagulant was used to treat cells prior to experimentation [p.256, Col. 2, ¶3].

Bronkhorst does not specifically teach the use of fixed erythrocytes.

Kelm teaches the use of fixed and non-fixed erythrocytes in cell binding experiments [p.577, Col. 2, and p.578, Col. 1, ¶2].

It would have been obvious to someone of ordinary skill in the art at the time of the instant invention to practice the method of Bronkhorst using fixed erythrocytes as shown by Kelm, where the

Art Unit: 1631

motivation would have been to use a well known technique for preserving cells for experimentation, as suggested by Kelm [p.578, Col. 1, ¶2], resulting in the practice of the instant claimed invention with predictable results.

### ***Response to Arguments***

Applicant's arguments, filed 11/20/2006, regarding Visscher are moot in view of the new ground(s) of rejections. These rejections are necessitated by amendment.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pablo Whaley whose telephone number is (571)272-4425. The examiner can normally be reached on 9:30am - 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marjorie Moran can be reached at 571-272-0720. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1631

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**/Pablo S. Whaley/**

Patent Examiner

Art Unit 1631

/John S. Brusca/

Primary Examiner, Art Unit 1631